To B.O. Dodge
NY Bot Gardens

December 4, 1946.

Dear Dr. Dodge,

In the course of our discussion during my visit last year, you recommended the use of Neurospora tetrasperma for the genetic analysis of heterocaryons. While, frankly, it seemed to me at the time that crassa was still to be preferred for the problems in which I was then interested, something has come up now that seems to demand the use of the bicaryotic, quadrinucleate ascospores of N. tetrasperma.

The problem I should like to investigate is this: in a multinucleate cell, is it possible to determine whether individual nuclei can be killed or inactivated by radiation, leaving the cell and the other nuclei intact? The utility of N. tetrasperma is as follows: Barring irregular segregations, (of which I would appreciate some estimate of the frequency) the spores each contain two pairs of nuclei, A and a respectively, and single-spore cultures, being heterocaryotic for mating type should fruit readily. If nuclei are killed by ultra-violet light or other treatments, it should be possible to obtain cultures from irradiated ascospores in which nuclei of only a single mating type remain, so that they will not form perithecia unless reacted with a testing culture of opposite mating type. It would be preferable to have a form in which the last mitotic division does not take place, that there might be only a single A and a single a nucleus per spore, but N. tetrasperma should be satisfactory nevertheless.

I should be gratefully obliged to you for stocks appropriate for this experiment. They consist of the following:

a. Wild type tetrasperma (A;a) of high fertility and regular segregation.
b. Monocaryotic tester stocks: (A) and (a).
c. If available, two distinct, monocaryotic cultures of different mating type, which will form a vigorous heterocaryon.

d. A colonial type, bicaryotic in A,a but pure in the morphological character, so that ascospores can be plated out, and the discrete colonies picked. This would have to be atype of high fertility to be useful, but might be necessary if doses of ultra-violet killing most of the spores are used, making random isolation of spores impracticable.

This is perhaps a large order, but I am asking now for all of the stocks which I am likely to require. If you can spare them, reprints of your papers concerning tetrasperma would be very handy to have, and greatly appreciated.

Very sincerely yours,

Joshua Lederberg.